

### REMARKS

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, Claims 1-35 will remain pending in the application. Applicants have amended Claims 1 and 31. These changes do not introduce new matter, and their entry is respectfully requested.

In the Office Action of March 13, 2003, the Examiner set forth a number of grounds for rejection. These grounds are addressed individually and in detail below.

#### *Rejections Under 35 U.S.C. § 112, first Paragraph*

Claims 1, 5 and 31 stand rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification for the reasons set forth on page 2 of the Office Action.

Applicant respectfully traverses the rejection. The specification of the present application discloses: “[c]ompared with conventional etchant compositions, the flow volume of BCl<sub>3</sub> in sccm (‘standard cubic centimeters per minute’) is reduced, **preferably, to zero**. BCl<sub>3</sub> may be used, though not as a source of chlorine, if one of the layers is aluminum. . .” (Page 7, lines 20-22 and page 8, line 1). Accordingly, Applicant respectfully submit that etchant chemistry comprising a chlorine source free of BCl<sub>3</sub> has been disclosed in the specification as to reasonably convey to one skilled in the art that the inventor at the time the application was filed had possession of the claimed invention .

These grounds of rejection have been obviated and thus, withdrawal of the 35 U.S.C. § 112, first paragraph, rejection is respectfully requested.

**Rejections Under 35 U.S.C. § 103**

Claims 1-4, 6 and 9-11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. 5,545,289) in view of Hoh et al (U.S. 5,874,363) for the reasons set forth on page 3 of the Office Action. Applicant respectfully traverses the rejection.

To establish a prima facie case of obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Independent claim 1 of the present invention, as amended, describes a method for etching a semiconductor device comprising the steps of (a) providing a semiconductor device having a plurality of layers, at least one of the layers of the semiconductor device comprising a refractory metal-containing material; and (b) etching the semiconductor device under conditions with an etchant composition comprising a first etchant chemistry which comprises a chlorine source free of  $\text{BCl}_3$  and a fluorine source, and a second etchant chemistry which is free of fluorine.

In contrast, Chen describes a method for etching a semiconductor device having a plurality of layers with a two-step etching process. The etching process uses the same fluorine-free etchant,  $\text{BCl}_3/\text{Cl}_2/\text{N}_2$ , in both steps. Chen does not disclose or suggest using a fluorine source in the first etching step, nor does it disclose or suggest using a different etchant in the second etching step.

Hoh only discloses a one-step etching process, and the process uses  $\text{HCl}_2$  and  $\text{Cl}_2$ . Hoh does not disclose or suggest using a fluorine source in the first etching step, nor does it disclose or suggest using a different etchant in the second etching step.

In addition, when applying 35 U.S.C. § 103, the Examiner is also required to adhere to the following tenets of patent law: (1) The claimed invention must be considered as a whole; (2) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination; (3) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and (4) Reasonable expectation of success is the standard with which obviousness is determined. (MPEP, 2141.01).

Furthermore, the CAFC in In re Sang Su Lee states teaching of references can be combined only if there is some suggestion or incentive to do so. In re Sang Su Lee (Fed. Cir. January 18, 2002) (quoting ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577 (Fed. Cir. 1984)). Particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed. *Id.* Furthermore, the Court states even when the level of skill in the art is high, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. *Id.*

In this case, Chen's invention is directed to a process for passivating and stripping of an etched semiconductor substrate. The etching process is described incidentally in the examples. Chen does not provide any desirability to modify the etch chemistry and thus the obviousness of making the combination with Hoh. Furthermore, even if one combines Chen's teaching of the two-step process with Hoh's etch chemistry of a chlorine source free of BCL<sub>3</sub>, the resulting method would use the same etch chemistry in both steps. There is no teaching, suggestion, or motivation in the cited references to use a first etchant chemistry which comprises both a chlorine source free of BCL<sub>3</sub> and a fluorine source, and a second etchant chemistry which is free of fluorine.

Accordingly, Applicant respectfully submits that independent claim 1 is patentable over Chen and Hoh.

Claims 5, 7-8 and 12-35 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (U.S. 5,545,289) in view of Hoh et al (U.S. 5,874,363) as applied to Claims 1-4, 6 and 9-11 above, and in view of Shoji (U.S. 5,853,602) for the reasons set forth on pages 3-4 of the Office Action. Applicant respectfully traverses the rejection.

With regard to Claims 5 and 7, as admitted by the Examiner, Chen in view of Hoh does not disclose that the first etchant further comprises a fluorine source. Shoji describes an etching process using an etchant comprising a chlorine and a fluorine source. However, even in the two-step embodiment of Shoji, both chlorine and fluorine are present in each of the steps. Shoji does not disclose or suggest a first etchant chemistry having both a chlorine source free of  $\text{BCl}_3$  and a fluorine source, and a second etchant chemistry which is free of fluorine. Furthermore, Shoji does not provide any motivation or desirability to one of ordinary skill in the art to substitute part of the procedure described in Chen. Accordingly, Applicant respectfully submit that the cited references, even if selectively combined, fail to disclose the claimed invention.

With regard to Claims 12-35, the Examiner concedes that the characterizing recitations of Claims 12-35, which go to the relatively amounts of source power and bias power employed in the etching process, are nowhere taught in the art. Office Action, page, paragraph 3. The Examiner characterizes these as "result-effective process parameters." Respectfully, the Examiner has mischaracterized the arts teaching. Nothing in either Shoji or Chen, or the other art identified indicates either source power or bias power, much less their ratio, to be a "result-effective process parameter." In the absence of such teaching, an otherwise unsupported conclusion that optimization is straightforward is insufficient to support a rejection under 35 U.S.C. §103. This issue was laid to rest nearly thirty years ago, In re Antonie, 559 F.2d 618, 195

USPQ 6 (CCPA 1977). The reviewing Court expressly rejected the position that it would be obvious to vary every parameter of a system in order to optimize effectiveness "if there is no evidence in the record that the prior art recognized that a particular parameter effected the result." 559 F.2d at 620. Indeed, even the Examiner's rejection appears to recognize that at best, the Examiner is inviting experimentation, an "obvious to try" standard. From page 4 of the Office Action:

[I]t is the Examiner's position that the variation of result-effective process parameters, such as concentration and power, would have been obvious to one of ordinary skill in the art, if only for experimentation purposes, in order to determine the optimum process conditions. (Emphasis supplied).

The Antonie Court, which soundly rejected the assertion that if a parameter is not identified, in the art, as result-effective it would nonetheless be obvious to optimize, also rejected the "obvious to try" standard. "Disregard for the unobviousness of the results of 'obvious to try' experiments disregard the 'invention as a whole' concept of Section 103." Id., citing In re Dien, 371 F.2d 886, 152 USPQ 550 (CCPA 1967).

Fundamentally, the Examiner has gone in the face of Antonie, which noted exceptions to the rule that "the discovery of an optimum value of a variable in a known process is normally obvious." As is the case herein, in Antonie, the CCPA found that where "the parameter optimized was not recognized to be a result-effective variable" constitutes an exception to that Rule. Id. Withdrawal of the rejection of Claims 12-35, independent of the etchant chemistry of the prior art, is accordingly, respectfully requested.

Therefore, the references of Chen, Hoh and Shoji do not support a *prima facie* case of obviousness. The grounds for this rejection have obviated and withdrawal of the 35 U.S.C. § 103 rejection is respectfully requested.

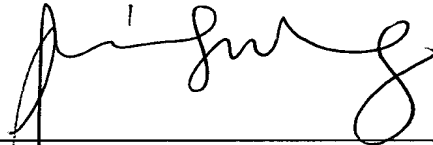
### CONCLUSION

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to contact Ping Wang, M.D. (Reg. No. 48,328) at the telephone number listed below.

Respectfully submitted,

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United States Court of Customs and Patent  
Appeals.

Application of Stephen F. ROYKA and  
Robert G. Martin.

Patent Appeal No. 9092.

Feb. 7, 1974.

Appeal from the decision of the Patent Office Board of Appeals affirming the examiner's rejection of patent application, Serial No. 648,701, for a 'responsive answer system.' The Court of Customs and Patent Appeals, Rich, J., held that an answer sheet for use in self-instruction and testing, in which were printed in 'response areas' meaningful information in permanent printing and confusing information in printing which could be removed, as by an erasure, both being legible so that a student, seeing a choice of answers to a question, was required to make a selection, the correctness of the selection being shown by the information which was then removed by the erasure, was not anticipated by prior patents and was therefore patentable.

Reversed.

#### West Headnotes

Patents ⇨ 66(1.20)  
291k66(1.20) Most Cited Cases

"Responsive answer system," answer sheet for use in self-instruction and testing, in which were printed in "response areas" meaningful information in permanent printing and confusing information in printing which could be removed, as by erasure, both being legible so that student, seeing a choice of answers to question, was required to make selection, correctness of selection being shown by information which was then removed by erasure, was not anticipated by prior patents and was therefore patentable. 35 U.S.C.A. §§ 102, 103.

Patents ⇨ 328(2)

291k328(2) Most Cited Cases

3,055,117, 3,364,857. Cited.

Patents ⇨ 328(1)  
291k328(1) Most Cited Cases

356,695. Cited.

\*981 Michael H. Shanahan, Rochester, N.Y., of record, for appellant; Thomas M. Webster, Rochester, N.Y., Boris Haskell, Washington, D.C. (Paris, Haskell & Levine), Washington, D.C., of counsel.

Joseph F. Nakamura, Washington, D.C., for the Commissioner of Patents. Fred W. Sherling, Washington, D.C., of counsel.

Before MARKEY, Chief Judge, and RICH, BALDWIN, LANE and MILLER, judges.

RICH, Judge.

This appeal is from the decision of the Patent Office Board of Appeals affirming the examiner's rejection of claims 28 and 30-36 of application serial No. 648,701, filed June 26, 1967, entitled 'Responsive Answer System.' We reverse.

#### The Invention

The appealed claims are directed to a device in the nature of an answer sheet for use in self-instruction and testing. The answer sheet may be associated with questions or separate therefrom. The essential features of the invention are that there are printed on the answer sheet in 'response areas' meaningful information in permanent printing and confusing information in printing which can be removed, as by an eraser, both being legible so that a student, seeing a choice of answers to a question, must make a selection. Having made a selection, he then applies an eraser to the selected response area and some of the information will be readily removed. What remains advises him of the correctness or otherwise of his answer. The following figures from the drawings are illustrative:

PERMANENT MEANINGFUL  
INFORMATION PLUS REMOVABLE  
CONFUSING INFORMATION

A. TRUE  
Y NO  
E  
S  
WRONG

B. FALSE  
N YES  
O  
RIGHT

FIG. 1A

PERMANENT MEANINGFUL  
INFORMATION

A. Y  
E  
S

B. N  
O

FIG. 1B

Fig. 1A shows two response areas to a given question before any removing action \*982 by the student has taken place and Fig. 1B shows the permanent information remaining in each after erasure of the removable information. Of course, if the student makes an initial choice of area A, showing up 'YES' or some other indication of a correct answer, he will not need to proceed further and erase the B area. In a modified form of the invention, a wrong selection, plus erasure, may expose, instead of or in addition to a statement that the answer is wrong, a number or other reference to further material which is to be studied.

A preferred method of printing the permanent meaningful information and the removable confusing information is by that type of xerography in which a fusible toner is used, the permanence of the printing depending on the extent to which the toner image is 'fixed' or fused by heat. By successive printings of the two kinds of information with fixing to different degrees, one image can be made permanent and the other made subject to easy removal, both images retaining such similarity of appearance that the user of the answer sheet cannot tell them apart.

Claim 28 is the principal claim, all others being dependent thereon, and reads as follows:

28. A device for selectively indicating information comprising

a support having response areas for presenting information for selection,

permanent printing indicative of meaningful information permanently fixed to said support within a response area, and

removable printing indicative of confusing information removably fixed to said support within a response area,

said meaningful and confusing information being substantially legible even when said permanent and removable printing are fixed over one another on said support,

said permanent and removable printing being substantially similar such that an observer cannot determine which information is permanent and which is removable

whereby the information within a response area is selected by attempting to remove the printing therein with the failure to remove printing identifying meaningful information.

Claims 30-36 add limitations which need not be considered except for noting that claims 33 and 34 alone specify the use of a xerographic toner, for which reason they were rejected on a different ground from the other claims.

The Rejection

The following references were relied on:



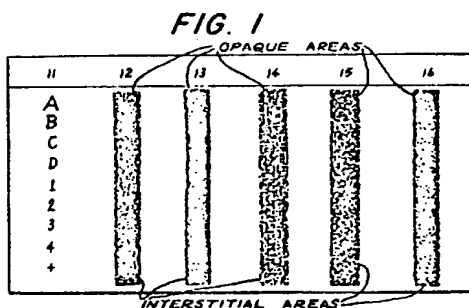
Reid et al. (Reid) 356,695 Jan. 25, 1887  
Bernstein et al.  
(Bernstein) 3,055,117 Sep. 25, 1962  
Lein et al. (Lein) 3,364,857 Jan. 23, 1968  
(filed Feb. 2, 1966)

Claims 28, 30, 31, and 32 were rejected as anticipated under 35 U.S.C. § 102 by Bernstein; claims 28, 31, 32, 35, and 36 were rejected as anticipated under § 102 by Reid; and claims 33 and 34 were rejected under 35 U.S.C. § 103 for obviousness, on either Bernstein or Reid in view of Lein. These were the examiner's rejections and the board affirmed them, adhering to its decision on reconsideration.

Bernstein discloses an answer sheet in which printed information representing a response is 'temporarily concealed from the observer' and he discloses a number of different ways of effectively concealing the response. His specification states:

The objects of the invention are accomplished by utilizing the hiding media to confuse the participant and to render the response and the hiding media indistinguishable and thus conceal the presence, absence, nature or position of the response from the participant. This may be effectuated by careful attention being paid to a number of factors including the design, \*983 color and position of the hiding or confusing media.

Fig. 1 of Bernstein's drawings, illustrates some of his concealing means:



The following is the written description:

Referring now to the drawing, FIG. 1 illustrates some of the many optically confusing patterns which may be positioned between the printed structure to be concealed and the point of observation. Column 11 shows the information which is to be concealed. This information is repeated in columns 12 through 16 but in each case is concealed by a pattern in accordance with the present invention. Column 12 utilizes a pattern comprising an alphabetical maze in both line and half tone screen. Column 13 utilizes a pattern comprising an absorbing field having a plurality of irregular dot-like interstices. Column 14 utilizes a pattern comprising a maze of plus signs combined with dots. Columns 15 and 16 illustrate irregular and non-repetitious patterns.

Bernstein says that if at least 50% Of the response is actually covered by the opaque portions of the confusion pattern, complete concealment is obtained. He also says that added means of concealment may be used, such as scoring and embossing and perforating the paper in order to scatter the light or let it shine through.

Reid is entitled 'Transformation Picture and Print.' The invention is said to be useful for advertisements, Christmas cards, birthday cards, valentines, and the like and as a source of amusement and instruction for children. It consists of a picture or print, part of which is permanently printed and part of which is removable from the paper on which it is printed. For the latter various soluble undercoatings or inks are described. If the picture is washed with a solvent, which may be water, the removable part disappears and the pictorial and/or typographic matter changes. The invention is illustrated by a typical nineteenth century temperance propaganda piece depicting the evils of drink. In the finished picture there are three scenes from left to right: Scene 1, the innocent child

leads her father home from the pub; Scene 2, Father sits slumped in the kitchen chair with his bottle beside him, the family wash hanging above his head, this picture being entitled 'The Effects of Drink'; Scene 3, Mother stands in front of a sign reading 'Pawn Shop.' Across the bottom of the picture is a legend which says 'Wash the above and see what water will do.' Fig. II shows the result of washing with water: Scene 1, a handsome young man and his happy daughter stroll on the street; Scene 2, Father sits erect in a well-appointed room at a clothcovered table, apparently having a cup of tea, obviously a gentleman; Scene 3, Mother beams from the sideline and the Pawn Shop sign has vanished. Two new subscriptions appear and the words 'The' and 'Drink' have disappeared, the resultant being a new picture title reading 'The Beneficial Effects of Temperance.' 'The Beneficial' and 'Temperance' were covered by some soluble opaque in the original picture. No doubt the overall effect is instruction. Perhaps there was amusement in bringing about the transformation.

Lein relates to xerography and is relied on only for its disclosure of the removability of partially fused toner and the permanence of fully fused toner.

#### OPINION

As to the § 102 anticipation rejections, it will suffice to consider independent claim 28. If it is not fully met by Reid \*984 or Bernstein, neither are the more limited dependent claims. It is elementary that to support an anticipation rejection, all elements of the claim must be found in the reference. We do not find claim 28 anticipated by Bernstein because, as we read the claim, it requires the display of legible meaningful and legible confusing information simultaneously, between which the user of the device may make a selection before he undertakes to remove any of the information from the response area selected by him. The element we find most clearly missing, contrary to the reasoning of the examiner and the board, is the legible confusing information. The Patent Office proposes to read this limitation on

Bernstein's confusion patterns which are nothing but meaningless obscuring screens, conveying no information and providing the user with no basis for making a selection, as called for by claim 28. In appellants' device the legible confusing information-- i.e., the wrong answers-- are legible in the sense that they can be read as intelligible words, not merely a jumble of type serving to obscure the words of the wrong answers.

Appellants were fully aware of Bernstein and discussed its disclosures in their specification, distinguishing from this and other prior art, saying, in part:

The inventive concept hereof confuses not by physical blocking as taught by the prior art, but by compounding, associating (including disarranging) permanent information with confusing information, usually at least some of which is similar in character to the permanent information as to render it impossible to tell which is permanent and which is removable confusing information. In the invention, generally no attempt is made to designedly physically cover the permanent information, but to confuse it beyond interpretation by the presentation of extraneous removable, confusing information.

Claims are not to be read in a vacuum and while it is true they are to be given the broadest reasonable interpretation during prosecution, their terms still have to be given the meaning called for by the specification of which they form a part. We cannot read the terms 'legible' and 'information' on Bernstein's confusion patterns, as did the examiner and the board. They are not 'legible,' as appellants use the term, and they convey no information.

As to anticipation by Reid, we find neither appellants' basic concept nor the substance of claim 28 to be disclosed. Apparently the solicitor could find little to support the rejection in Reid for all he says in his brief-- so far as claim 28 is concerned-- is:

Reid discloses a sheet which may be used for instruction and which may have a removable

design partly covering a fixed design \* \* \*. Therefore, the disclosure of the reference encompasses the arrangement wherein a removable design covers a fixed design with both designs being substantially legible.

But claim 28 does not call for an arrangement wherein a removable design covers a fixed design. It calls for response areas, which Reid does not have, containing meaningful information in permanent printing together with removable printing conveying confusing information, both legible at the same time, between which a 'selection' can be made. The only choice offered to the user by Reid is to follow the instruction to wash the whole visible picture with water or other solvent, thus removing the overprinting, to discover what the permanent picture is. The Patent Office attempt to read claim 28 on this reference is a tour de force. We hold that Reid does not anticipate for failure to meet the limitations of claim 28 to 'response areas,' to the presentation of two categories of information (meaningful-permanent and removable-confusing) within such areas, and the possibility of selection. Anticipation requires a finding that the claimed invention be disclosed. It is not enough to say that appellants' invention and the reference are \*985 both usable for instruction and both consist of permanent and removable printings on paper, as did the solicitor.

The dependent claims rejected with claim 28, as anticipated under § 102, are not anticipated since claim 28 is not anticipated. Some of them merely add features which are disclosed by the references and some do not. Insofar as they do not, they further negative anticipation. The examiner recognized this fact as to claims 33 and 34, which are limited to xerography, and therefore did not reject them under § 102. Similarly, he did not reject claim 30 on Reid or claims 35 and 36 on Bernstein. We find that claims 35 and 36 contain limitations which additionally distinguish from Reid. We have already noted that Reid had no 'response areas' as required by claim 28 and so Reid does not disclose the structure of claim 35 which additionally requires both the correct and incorrect

answers to appear within the same response area.

As to claim 36, the examiner said it 'is merely a printed matter variation of the design of the reference,' Reid. This is not a valid reason for rejection. Printed matter may very well constitute structural limitations upon which patentability can be predicated. We have commented on this matter in *re Jones*, 373 F.2d 1007, 54 CCPA 1218 (1967); and in *re Miller*, 418 F.2d 1392, 57 CCPA 809 (1969), and will not repeat ourselves. The limitations of claim 36 are not remotely suggested by Reid.

There remains the § 103 rejection of claims 33 and 34. Do they, taken together with all of the limitations of claim 28 from which they depend, define obvious subject matter? The difference between claim 28 and these two dependent claims is that they add the limitations to xerography. If Bernstein and Reid showed the claimed invention except for xerography, the addition of the Lein reference would make the subject matter of the claims obvious. But that is not the situation here. Adding the knowledge of xerographic technology to Bernstein or Reid still does not make the invention of claims 33 and 34 obvious for the same reasons we have given above in discussing anticipation. The essence of appellants' invention, as set forth in claim 28, is still missing notwithstanding the addition of the Lein reference and we see nothing in the combinations of references which would have made the invention obvious to one of ordinary skill in the art at the time it was made. We will, therefore, reverse this rejection.

The decision of the board is reversed.

Reversed.

490 F.2d 981, 180 U.S.P.Q. 580

END OF DOCUMENT

United States Court of Customs and Patent  
Appeals.

Application of David W. WILSON.

Patent Appeal No. 8271.

May 7, 1970.

Proceeding on patent application serial No. 332,321. The Patent Office Board of Appeals affirmed rejection of claims 1-4, 8-10, and 15-21, and applicant appealed. The Court of Customs and Patent Appeals, Lane, J., held that Patent Office Board of Appeals' disregard of term 'incompatible' as used in claims relating to treatment of power driven rotary brushes with 'incompatible' resins rendered its conclusion of obviousness unsupported.

Reversed.

West Headnotes

[1] Patents ⇨ 101(5)  
291k101(5) Most Cited Cases

Specification with respect to composition for treatment of power driven rotary brushes was sufficient to support claims in issue. 35 U.S.C.A. § 112.

[2] Patents ⇨ 51(1)  
291k51(1) Most Cited Cases

All words in claim must be considered in judging patentability of claim against prior art. 35 U.S.C.A. § 103.

[3] Patents ⇨ 16(1)  
291k16(1) Most Cited Cases  
(Formerly 291k18)

[3] Patents ⇨ 101(6)  
291k101(6) Most Cited Cases

If no reasonably definite meaning can be ascribed to certain terms in claim, subject matter does not become obvious, but claim becomes indefinite. 35 U.S.C.A. § 503.

[4] Patents ⇨ 113(6)  
291k113(6) Most Cited Cases

Patent Office Board of Appeals' disregard of term "incompatible" as used in claims relating to treatment of power driven rotary brushes with "incompatible" resins rendered its conclusion of obviousness unsupported. 35 U.S.C.A. § 103.

Patents ⇨ 328(2)  
291k328(2) Most Cited Cases

2,933,469, 2,890,136, 3,051,670, 3,015,638.  
Cited.

**\*\*1382 \*1029** Oberlin, Maky, Donnelly & Renner, William E. Thomson, Jr., John C. Oberlin, Cleveland, Ohio, attorneys of record, for appellant.

Joseph Schimmel, Washington, D.C., for the Commissioner of Patents. Raymond E. Martin, Washington, D.C., of counsel.

Before RICH, Acting Chief Judge, ALMOND, BALDWIN and LANE, Judges, and FORD, Judge, United States Customs Court, sitting by designation.

LANE, Judge.

This appeal is from the decision of the Patent Office Board of Appeals, which affirmed the rejection of claims 1-4, 8-10, and 15-21 in appellant's application serial No. 332,321, filed November 5, 1963, for 'Treated Brush and Brush Treating Composition.' Four other claims have been allowed. We conclude that the board's decision must be reversed.

#### THE DISCLOSURE

Appellant's disclosure discusses certain problems in the treatment of power-driven rotary brushes. According to the disclosure, it was desirable to produce **\*\*1383** a composition for treating the brush bristles, whereby the ability of the bristles to hold abrasive particles would be enhanced. It discloses that the treatment composition should have a strength

of adhesion to the brush bristles sufficiently great to prevent such composition from transferring excessively to the object being brushed; that the treatment material should wear at substantially the same rate as the brush bristles; that the material should have a high temperature softening point; and that the strength of adhesion between the treating composition and the abrasive particles must be sufficient to withstand the centrifugal force which normally would tend to throw the abrasive outwardly from the brush. The disclosure \*1030 states that previously known brush-treating compositions did not accomplish all these objectives and had a tendency to dry and lose their tackiness over a period of time, thus becoming useless for holding abrasive particles on the bristles.

The disclosure states that appellant discovered that a composition having a high temperature softening point and a high degree of tackiness could be produced if a film-forming resin were blended with a tackifier resin which was incompatible with (insoluble in) the film-forming resin. The resulting composition would have two distinct phases: a continuous phase comprised of film-forming resin, either alone or saturated with a small quantity of tackifier resin, and a dispersed phase comprised of small particles of tackifier resin. The two resins may be either completely or partially incompatible, and the disclosure states that the more insoluble the resins, the greater the tack which the composition possesses. Appellant also disclosed that certain plasticizers could be added to render the resins more incompatible, thus further increasing the tack of the composition. Finally, appellant stated that the entire composition could be dissolved in a volatile solvent to allow easy application to the brush, the solvent being one which quickly evaporates upon such application.

The specification contains a list of suitable film-forming resins, including ethyl cellulose, nitro cellulose, cellulose acetate, polyvinyl acetate and cis- polyisoprene, among other materials. A list of tackifiers is given, including certain esters of abietic acid, polyvinyl ethyl ether, coumarone indene resin

and terpene resins. A list of plasticizers is also given. The specification then gives four examples showing how to combine various film-formers, tackifiers, plasticizers and solvents to obtain brush-treating compositions of the desired characteristics, and explains how to apply them to brushes.

#### THE CLAIMS

In view of the result we reach, we find that claims 1 and 8 are representative:

1. A two-phase brush treating composition having a high softening point and sufficient tack to retain abrasive material firmly adhered to brush fill material comprising a film-forming resin and a tackifier resin which is incompatible with said film-forming resin, said two phases comprising a continuous phase formed of said film-forming resin and a dispersed phase formed of small particles of tackifier resin.

8. In combination, a rotary brush having brush fill material and a two-phase pressure sensitive adhesive brush treating composition adhered thereto having a high softening point and sufficient tack to retain abrasive material firmly adhered to such brush fill material comprising a film-forming resin and a tackifier resin which is incompatible with said film-forming resin, said two phases \*1031 comprising a continuous phase formed of said film-forming resin and a dispersed phase formed of small particles of tackifier resin.

\*\*1384 The remaining claims on appeal are narrower, containing recitations of specific resins, plasticizers, etc.

#### THE PRIOR ART

Grantham [FN1] relates to coatings for film material and discloses a coating composition comprising a cellulose derivative film-former, a blending resin, a plasticizer, and an organic solvent. Grantham teaches that the blending agent and the film-former should be compatible.

FN1. U.S.Pat. 3,051,670, issued August 28, 1962.

Depew [FN2] teaches the preparation of emulsions consisting of a continuous phase of water and a discontinuous phase of elastomer particles and particles of a volatile hydrocarbon, with vulcanizing ingredients and other additives dispersed in the hydrocarbon particles. Depew then stated that where a dispersion with additional adhesive properties is desired, an adhesive, such as certain of the tackifier resins disclosed by appellants, can be added to the emulsion, and that

FN2. U.S.Pat. 2,933,469, issued April 19, 1960.

this adhesive can be water soluble or dispersed as particles. \* \* \* The chemistry of the adhesive component is not critical to this invention. The important thing is that the deposited film shall be tacky and adhesive.

Sergi [FN3] relates to adhesives suitable for installation of floor-covering products such as linoleum. Sergi's composition consists of a tackifier resin dispersed in a latex binder; the tackifier and latex must be compatible with one another, according to the Sergi disclosure.

FN3. U.S.Pat. 3,015,638, issued January 2, 1962.

Vaughan [FN4] teaches impregnating a fibrous buffing wheel with an aqueous emulsion consisting of a tacky resin and an emulsifier or stabilizer such as glue or gum.

FN4. U.S.Pat. 2,890,136, issued June 9, 1959.

#### THE BOARD

The board found the composition claims to be unpatentable over Depew, Sergi or Grantham under 35 U.S.C. § 103. The board reached this conclusion after noting that each of the three references shows some of the film-formers, tackifiers, plasticizers and solvents appearing in appellant's lists. The board found that the recited limitation of incompatibility was too relative a term to distinguish over the compositions of the references.

The board found that the claims to the treated brush were unpatentable, under 35 U.S.C. § 103, over Vaughan in view of Sergi

or Depew. Since Vaughan shows treating brushes, the board apparently considered \*1032 it obvious to treat brushes with compositions which it thought were made obvious by Sergi or Depew.

The board also affirmed the rejection of certain claims for being 'broader than the disclosure' under 35 U.S.C. § 112. The board's basis for this rejection was that the specification did not provide adequate guidelines for making a selection among the various disclosed ingredients, nor among other materials which are not disclosed but would be included by the claims.

#### OPINION

[1] We first treat the rejection under section 112. This rejection is in effect an attack on the specification as being insufficient to teach how to practice the broad invention claimed. The rejection is therefore under the first paragraph of section 112. The board's position, as mentioned above, was that the specification did not teach how to select ingredients so that the desired incompatibility would result. We disagree with the board's position on this point. First of all, appellant provided four examples, each specifying the nature and amounts of materials to be used. Secondly, the record indicates that it involves only routine experimentation to find out which resins are incompatible. The examiner admitted as much when, \*\*1385 with regard to obviousness, he said 'selecting the proper tackifier and film-forming resin from those listed in the references to form an emulsion or two-phase composition would be within the expected skill of the art and would merely involve routine experimentation.' We conclude that appellant has provided a sufficient specification to support the claims here in issue.

[2][3][4] Turning to the rejection of the claims for obviousness, we again disagree with the board's position. The board has disregarded the term 'incompatible,' as used in the claims, because it is 'too relative' to distinguish over the compositions of the references. Appellant contends this limitation is essential in

defining his invention. There has been no rejection here for indefiniteness, under the second paragraph of section 112. Rather than reject the claims as indefinite, the board chose to ignore the language it considered indefinite, and proceeded as though that language were not in the claims. The board said, in effect, that since we do not know what 'incompatible' means, and the rest of the claim defines obvious subject matter, there is no basis for concluding unobviousness. This reasoning is incorrect. All words in a claim must be considered in judging the patentability of that claim against the prior art. If no reasonably definite meaning can be ascribed to certain terms in the claim, the subject matter does not become obvious-- the claim becomes indefinite. In the present case, we think the \*1033 term 'incompatible' is defined with reasonable definiteness in the specification. While it is true that the word is not perfectly precise, under the circumstances of the present case there appears to be no other way for appellant to describe his discovery. In any event, the ignoring of this term by the board renders its conclusion of obviousness unsupported. None of the references discloses a two-phase composition of incompatible resins or suggests that such a composition would have the properties disclosed by appellant. Grantham and Sergi both expressly teach that the components of their compositions should be compatible. Neither Vaughan nor Depew uses a resin as the continuous phase. While Depew states, as quoted above, that the adhesive material may be dispersed as particles in the continuous phase, and hence be incompatible with the continuous phase material, it cannot be ignored that Depew's continuous phase is of water, not a film-forming resin as recited in appellant's claims. Furthermore, there is no suggestion in Depew or Vaughan that there are advantages in using an adhesive which is insoluble in the aqueous phase. There is nothing of record, therefore, from which we can properly conclude that the subject matter of appellant's claims would have been obvious at the time of his invention. The decision of the board must accordingly be reversed.

\*1029 Reversed.

424 F.2d 1382, 57 C.C.P.A. 1029, 165 U.S.P.Q. 494

END OF DOCUMENT

# United States Court of Appeals for the Federal Circuit

00-1158  
(Serial No. 07/631,240)

IN RE SANG SU LEE

Richard H. Stern, of Washington, DC, argued for Sang Su Lee. With him on the brief was Robert E. Bushnell.

Sidney O. Johnson, Jr., Associate Solicitor, of Arlington, Virginia, argued for the Director of the U.S. Patent and Trademark Office. With him on the brief were John M. Whealan, Solicitor, and Raymond T. Chen, Associate Solicitor. Of counsel were Maximilian R. Peterson and Mark Nagumo, Associate Solicitors.

Appealed from:      Patent & Trademark Office  
                             Board of Patent Appeals and Interferences



# United States Court of Appeals for the Federal Circuit

00-1158  
(Serial No. 07/631,240)

IN RE SANG-SU LEE

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DECIDED: January 18, 2002

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Before NEWMAN, CLEVINGER, and DYK, Circuit Judges.

NEWMAN, Circuit Judge.

Sang-Su Lee appeals the decision of the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office, rejecting all of the claims of Lee's patent application Serial No. 07/631,210 entitled "Self-Diagnosis and Sequential-Display Method of Every Function."<sup>1</sup> We vacate the Board's decision for failure to meet the adjudicative standards for review under the Administrative Procedure Act, and remand for further

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<sup>1</sup> Ex parte Lee, No. 1994-1989 (Bd. Pat. App. & Int. Aug. 30, 1994; on reconsid'n Sept. 29, 1999).

proceedings.

### **The Prosecution Record**

Mr. Lee's patent application is directed to a method of automatically displaying the functions of a video display device and demonstrating how to select and adjust the functions in order to facilitate response by the user. The display and demonstration are achieved using computer-managed electronics, including pulse-width modulation and auto-fine-tuning pulses, in accordance with procedures described in the specification. Claim 10 is representative:

10. A method for automatically displaying functions of a video display device, comprising:
  - determining if a demonstration mode is selected;
  - if said demonstration mode is selected, automatically entering a picture adjustment mode having a picture menu screen displaying a list of a plurality of picture functions; and
  - automatically demonstrating selection and adjustment of individual ones of said plurality of picture functions.

The examiner rejected the claims on the ground of obviousness, citing the combination of two references: United States Patent No. 4,626,892 to Nortrup, and the Thunderchopper Helicopter Operations Handbook for a video game. The Nortrup reference describes a television set having a menu display by which the user can adjust various picture and audio functions; however, the Nortrup display does not include a demonstration of how to adjust the functions. The Thunderchopper Handbook describes the Thunderchopper game's video display as having a "demonstration mode" showing how to play the game; however, the Thunderchopper Handbook makes no mention of the adjustment of picture or audio functions. The examiner held that it would have been obvious to a person of ordinary skill to combine the teachings of these references to produce the Lee system.

Lee appealed to the Board, arguing that the Thunderchopper Handbook simply

explained how to play the Thunderchopper game, and that the prior art provided no teaching or motivation or suggestion to combine this reference with Nortrup, or that such combination would produce the Lee invention. The Board held that it was not necessary to present a source of a teaching, suggestion, or motivation to combine these references or their teachings. The Board stated:

The conclusion of obviousness may be made from common knowledge and common sense of a person of ordinary skill in the art without any specific hint or suggestion in a particular reference.

Board op. at 7. The Board did not explain the "common knowledge and common sense" on which it relied for its conclusion that "the combined teachings of Nortrup and Thunderchopper would have suggested the claimed invention to those of ordinary skill in the art."

Lee filed a request for reconsideration, to which the Board responded after five years. The Board reaffirmed its decision, stating that the Thunderchopper Handbook was "analogous art" because it was "from the same field of endeavor" as the Lee invention, and that the field of video games was "reasonably pertinent" to the problem of adjusting display functions because the Thunderchopper Handbook showed video demonstrations of the "features" of the game. On the matter of motivation to combine the Nortrup and Thunderchopper references, the Board stated that "we maintain the position that we stated in our prior decision" and that the Examiner's Answer provided "a well reasoned discussion of why there is sufficient motivation to combine the references." The Board did not state the examiner's reasoning, and review of the Examiner's Answer reveals that the examiner merely stated that both the Nortrup function menu and the Thunderchopper demonstration mode are program features and that the Thunderchopper mode "is user-friendly" and it functions as a tutorial, and that it would have been obvious to combine them.

Lee had pressed the examiner during prosecution for some teaching, suggestion, or motivation in the prior art to select and combine the references that were relied on to show obviousness. The Examiner's Answer before the Board, plus a Supplemental Answer, stated that the combination of Thunderchopper with Nortrup "would have been obvious to one of ordinary skill in the art since the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software," and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial." The Board adopted the examiner's answer, stating "the examiner has provided a well reasoned discussion of these references and how the combination of these references meets the claim limitations." However, perhaps recognizing that the examiner had provided insufficient justification to support combining the Nortrup and Thunderchopper references, the Board held, as stated supra, that a "specific hint or suggestion" of motivation to combine was not required.

This appeal followed.

### ***Judicial Review***

Tribunals of the PTO are governed by the Administrative Procedure Act, and their rulings receive the same judicial deference as do tribunals of other administrative agencies. Dickinson v. Zurko, 527 U.S. 150, 50 USPQ2d 1930 (1999). Thus on appeal we review a PTO Board's findings and conclusions in accordance with the following criteria:

5 U.S.C. §706(2) The reviewing court shall—

(2) hold unlawful and set aside agency actions, findings, and conclusions found to be—

(A) arbitrary, capricious, an abuse of discretion, or otherwise not

in accordance with law;

\*\*\*\*

(E) unsupported by substantial evidence in a case subject to sections 556 and 557 of this title or otherwise reviewed on the record of an agency hearing provided by statute;

For judicial review to be meaningfully achieved within these strictures, the agency tribunal must present a full and reasoned explanation of its decision. The agency tribunal must set forth its findings and the grounds thereof, as supported by the agency record, and explain its application of the law to the found facts. The Court has often explained:

The Administrative Procedure Act, which governs the proceedings of administrative agencies and related judicial review, establishes a scheme of "reasoned decisionmaking." Not only must an agency's decreed result be within the scope of its lawful authority, but the process by which it reaches that result must be logical and rational.

Allentown Mack Sales and Service, Inc. v. National Labor Relations Bd., 522 U.S. 359, 374 (1998) (citation omitted). This standard requires that the agency not only have reached a sound decision, but have articulated the reasons for that decision. The reviewing court is thus enabled to perform meaningful review within the strictures of the APA, for the court will have a basis on which to determine "whether the decision was based on the relevant factors and whether there has been a clear error of judgment." Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402, 416 (1971). Judicial review of a Board decision denying a n application for patent is thus founded on the obligation of the agency to make the necessary findings and to provide an administrative record showing the evidence on which the findings are based, accompanied by the agency's reasoning in reaching its conclusions. See In re Zurko, 258 F.3d 1379, 1386, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001) (review is on the administrative record); In re Gartside, 203 F.3d 1305, 1314, 53 USPQ2d 1769, 1774 (Fed. Cir. 2000) (Board decision "must be justified within the four corners of the record").

As applied to the determination of patentability vel non when the issue is obviousness, "it is fundamental that rejections under 35 U.S.C. §103 must be based on evidence comprehended by the language of that section." In re Grasselli, 713 F.2d 731, 739, 218 USPQ 769, 775 (Fed. Cir. 1983). The essential factual evidence on the issue of obviousness is set forth in Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966) and extensive ensuing precedent. The patent examination process centers on prior art and the analysis thereof. When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. See, e.g., McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) ("the central question is whether there is reason to combine [the] references," a question of fact drawing on the Graham factors).

"The factual inquiry whether to combine references must be thorough and searching." Id. It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. See, e.g., Brown & Williamson Tobacco Corp. v. Philip Morris Inc., 229 F.3d 1120, 1124-25, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000) ("a showing of a suggestion, teaching, or motivation to combine the prior art references is an 'essential component of an obviousness holding'") (quoting C.R. Bard, Inc., v. M3 Systems, Inc., 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998)); In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."); In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637

(Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); In re Fine, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) ("teachings of references can be combined only if there is some suggestion or incentive to do so.") (emphasis in original) (quoting ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)).

The need for specificity pervades this authority. See, e.g., In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed"); In re Rouffet, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998) ("even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious."); In re Fritch, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (the examiner can satisfy the burden of showing obviousness of the combination "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references").

With respect to Lee's application, neither the examiner nor the Board adequately supported the selection and combination of the Nortrup and Thunderchopper references to render obvious that which Lee described. The examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different

device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is material to patentability, and could not be resolved on subjective belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher." W.L. Gore v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983). Thus the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion.

Deferential judicial review under the Administrative Procedure Act does not relieve the agency of its obligation to develop an evidentiary basis for its findings. To the contrary, the Administrative Procedure Act reinforces this obligation. See, e.g., Motor Vehicle Manufacturers Ass'n v. State Farm Mutual Automobile Ins. Co., 463 U.S. 29, 43 (1983) ("the agency must examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'") (quoting Burlington Truck Lines v. United States, 371 U.S. 156, 168 (1962)); Securities & Exchange Comm'n v. Chenery Corp., 318 U.S. 80, 94 (1943) ("The orderly function of the process of review requires that the grounds upon which the administrative agency acted are clearly disclosed and adequately sustained.")).

In its decision on Lee's patent application, the Board rejected the need for "any specific hint or suggestion in a particular reference" to support the combination of the Nortrup and Thunderchopper references. Omission of a relevant factor required by precedent is both legal



error and arbitrary agency action. See Motor Vehicle Manufacturers, 463 U.S. at 43 ("an agency rule would be arbitrary and capricious if the agency . . . entirely failed to consider an important aspect of the problem"); Mullins v. Department of Energy, 50 F.3d 990, 992 (Fed. Cir. 1995) ("It is well established that agencies have a duty to provide reviewing courts with a sufficient explanation for their decisions so that those decisions may be judged against the relevant statutory standards, and that failure to provide such an explanation is grounds for striking down the action."). As discussed in National Labor Relations Bd. v. Ashkenazy Property Mgt. Corp., 817 F.2d 74, 75 (9th Cir. 1987), an agency is "not free to refuse to follow circuit precedent."

The foundation of the principle of judicial deference to the rulings of agency tribunals is that the tribunal has specialized knowledge and expertise, such that when reasoned findings are made, a reviewing court may confidently defer to the agency's application of its knowledge in its area of expertise. Reasoned findings are critical to the performance of agency functions and judicial reliance on agency competence. See Baltimore and Ohio R. R. Co. v. Aberdeen & Rockfish R. R. Co., 393 U.S. 87, 91-92 (1968) (absent reasoned findings based on substantial evidence effective review would become lost "in the haze of so-called expertise"). The "common knowledge and common sense" on which the Board relied in rejecting Lee's application are not the specialized knowledge and expertise contemplated by the Administrative Procedure Act. Conclusory statements such as those here provided do not fulfill the agency's obligation. This court explained in Zurko, 258 F.3d at 1385, 59 USPQ2d at 1697, that "deficiencies of the cited references cannot be remedied by the Board's general conclusions about what is 'basic knowledge' or 'common sense.'" The Board's findings must extend to all material facts and must be documented on the record, lest the "haze of so-called

expertise" acquire insulation from accountability. "Common knowledge and common sense," even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority. See Allentown Mack, 522 U.S. at 376 ("Because reasoned decisionmaking demands it, and because the systemic consequences of any other approach are unacceptable, the Board must be required to apply in fact the clearly understood legal standards that it enunciates in principle . . . .")

The case on which the Board relies for its departure from precedent, In re Bozek, 416 F.2d 1385, 163 USPQ 545 (CCPA 1969), indeed mentions "common knowledge and common sense," the CCPA stating that the phrase was used by the Solicitor to support the Board's conclusion of obviousness based on evidence in the prior art. Bozek did not hold that common knowledge and common sense are a substitute for evidence, but only that they may be applied to analysis of the evidence. Bozek did not hold that objective analysis, proper authority, and reasoned findings can be omitted from Board decisions. Nor does Bozek, after thirty-two years of isolation, outweigh the dozens of rulings of the Federal Circuit and the Court of Customs and Patent Appeals that determination of patentability must be based on evidence. This court has remarked, in Smiths Industries Medical Systems, Inc. v. Vital Signs, Inc., 183 F.3d 1347, 1356, 51 USPQ2d 1415, 1421 (Fed. Cir. 1999), that Bozek's reference to common knowledge "does not in and of itself make it so" absent evidence of such knowledge.

The determination of patentability on the ground of unobviousness is ultimately one of judgment. In furtherance of the judgmental process, the patent examination procedure serves both to find, and to place on the official record, that which has been considered with respect to patentability. The patent examiner and the Board are deemed to have experience in the field

of the invention; however, this experience, insofar as applied to the determination of patentability, must be applied from the viewpoint of "the person having ordinary skill in the art to which said subject matter pertains," the words of section 103. In finding the relevant facts, in assessing the significance of the prior art, and in making the ultimate determination of the issue of obviousness, the examiner and the Board are presumed to act from this viewpoint. Thus when they rely on what they assert to be general knowledge to negate patentability, that knowledge must be articulated and placed on the record. The failure to do so is not consistent with either effective administrative procedure or effective judicial review. The board cannot rely on conclusory statements when dealing with particular combinations of prior art and specific claims, but must set forth the rationale on which it relies.

### ***Alternative Grounds***

At oral argument the PTO Solicitor proposed alternative grounds on which this court might affirm the Board's decision. However, as stated in Burlington Truck Lines, Inc. v. United States, 371 U.S. 156, 168 (1962), "courts may not accept appellate counsel's post hoc rationalization for agency action." Consideration by the appellate tribunal of new agency justifications deprives the aggrieved party of a fair opportunity to support its position; thus review of an administrative decision must be made on the grounds relied on by the agency. "If those grounds are inadequate or improper, the court is powerless to affirm the administrative action by substituting what it considers to be a more adequate or proper basis." Securities & Exchange Comm'n v. Chenery Corp., 332 U.S. 194, 196 (1947). As reiterated in Federal Election Comm'n v. Akins, 524 U.S. 11, 25 (1998), "If a reviewing court agrees that the agency misinterpreted the law, it will set aside the agency's action and remand the case— even though

the agency (like a new jury after a mistrial) might later, in the exercise of its lawful discretion, reach the same result for a different reason." Thus we decline to consider alternative grounds that might support the Board's decision.

### ***Further Proceedings***

Sound administrative procedure requires that the agency apply the law in accordance with statute and precedent. The agency tribunal must make findings of relevant facts, and present its reasoning in sufficient detail that the court may conduct meaningful review of the agency action. In Radio-Television News Directors Ass'n v. FCC, 184 F.3d 872 (D.C. Cir. 1999) the court discussed the "fine line between agency reasoning that is 'so crippled as to be unlawful' and action that is potentially lawful but insufficiently or inappropriately explained," quoting from Checkosky v. Securities & Exch. Comm'n, 23 F.3d 452, 464 (D.C. Cir. 1994); the court explained that "[i]n the former circumstance, the court's practice is to vacate the agency's order, while in the latter the court frequently remands for further explanation (including discussion of the relevant factors and precedents) while withholding judgment on the lawfulness of the agency's proposed action." Id. at 888. In this case the Board's analysis of the Lee invention does not comport with either the legal requirements for determination of obviousness or with the requirements of the Administrative Procedure Act that the agency tribunal set forth the findings and explanations needed for "reasoned decisionmaking." Remand for these purposes is required. See Overton Park, 401 U.S. at 420-221 (remanding for further proceedings appropriate to the administrative process).

VACATED AND REMANDED

Briefs and Other Related Documents

United States Court of Appeals  
Federal Circuit.

ACS HOSPITAL SYSTEMS, INC.,  
Appellant/Cross-Appellee,

v.

MONTEFIORE HOSPITAL and Wells  
National Services Corporation, Appellees/  
Cross-  
Appellants.

Appeal Nos. 83-1121, 83-1132.

April 27, 1984.

Patent holder brought infringement action. The United States District Court for the Western District of Pennsylvania, Edward Dumbauld, J., 564 F.Supp. 330, entered judgment for defendants, and plaintiff appealed. The Court of Appeals, Edward S. Smith, Circuit Judge, held that: (1) claim No. 1 of patent No. 4,183,057, relating to hospital television rental device permitting patient's use without intervention of an attendant was not invalid for obviousness, and (2) claim No. 1 of patent No. 4,183,057 relating to hospital television rental device permitting patient's use without intervention of an attendant was not infringed, either literally or under the doctrine of equivalents.

Affirmed in part and reversed in part.

West Headnotes

[1] Patents ⇌ 112.1  
291k112.1 Most Cited Cases  
(Formerly 291k312)

[1] Patents ⇌ 312(1.2)  
291k312(1.2) Most Cited Cases  
(Formerly 291k312(1.8), 291k312(1),  
291k312(8))

The presumption of patent validity is never annihilated, destroyed, or even weakened, regardless of what facts are of record; the

presumption is a statutory procedural device which assigns to the party asserting invalidity the burden of proving invalidity.

[2] Patents ⇌ 312(1.1)  
291k312(1.1) Most Cited Cases  
(Formerly 291k312(1))

The burden of persuasion is, and remains always, on party asserting invalidity of patent.

[3] Patents ⇌ 324.56  
291k324.56 Most Cited Cases

In patent infringement suit, trial court's limited assessment of prior art was clearly erroneous, in that the court failed to find that the additional references were within the scope and content of the prior art, but the errors were harmless, because they were not shown to have influenced trial court's judgment.

[4] Patents ⇌ 36(3)  
291k36(3) Most Cited Cases

In patent infringement action brought by holder of patent relating to hospital television rental device, trial court's finding that there were no differences between the claimed subject matter and the prior art was clearly erroneous.

[5] Patents ⇌ 101(4)  
291k101(4) Most Cited Cases

Claims are to be read and construed in light of the specification and prosecution history of the patent.

[6] Patents ⇌ 101(2)  
291k101(2) Most Cited Cases

Claims should be construed, if possible, so as to sustain their validity.

[7] Patents ⇌ 165(4)  
291k165(4) Most Cited Cases

In patent infringement suit brought by holder of patent relating to hospital television rental device permitting patient's use without intervention of an attendant, trial court's construction of the claims as all systems enabling a hospital patient to view television normally under his own power without the aid of an attendant was incorrect as a matter of law.

**[8] Patents ⇨ 16(2)**  
291k16(2) Most Cited Cases

Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. 35 U.S.C.A. § 103.

**[9] Patents ⇨ 16.29**  
291k16.29 Most Cited Cases

Claim No. 1 of patent No. 4,183,057, relating to hospital television rental device permitting patient's use without intervention of an attendant was not invalid for obviousness. 35 U.S.C.A. § 103.

**[10] Patents ⇨ 226.6**  
291k226.6 Most Cited Cases

Infringement is determined on the basis of the claims, not on the basis of a comparison with the patentee's commercial embodiment of the claimed invention.

**[11] Federal Courts ⇨ 941**  
170Bk941 Most Cited Cases

Where trial court fails to make findings, the judgment will normally be vacated and the action remanded for appropriate findings to be made, but when a full understanding may be had without the aid of separate findings, a narrow exception to that general rule is recognized.

**[12] Federal Courts ⇨ 850.1**  
170Bk850.1 Most Cited Cases  
(Formerly 170Bk850)

Where district court has not misapplied the

controlling legal standards in its evaluation of the evidence, its ultimate finding as well as the subsidiary findings upon which the ultimate finding necessarily depends is subject to review on appeal under the clearly erroneous standard; Court of Appeals examines the record in order to review trial court's judgment, and findings it made or necessarily had to have made to support that judgment and, thus, to conclude the controversy without unnecessary further expenditure of judicial resources, if possible. Fed.Rules Civ.Proc.Rule 52(a), 28 U.S.C.A.

**[13] Patents ⇨ 237**  
291k237 Most Cited Cases

Claim No. 1 of patent No. 4,183,057 relating to hospital television rental device permitting patient's use without intervention of an attendant was not infringed, either literally or under the doctrine of equivalents.

**[14] Patents ⇨ 325.11(4)**  
291k325.11(4) Most Cited Cases

In patent infringement suit, trial court did not abuse its discretion in denying prevailing defendant attorney fees.

**Patents ⇨ 328(2)**  
291k328(2) Most Cited Cases

2,856,474, 3,188,384, 3,335,421, 3,631,444, 3,886,302. Cited as prior art.

**Patents ⇨ 328(2)**  
291k328(2) Most Cited Cases

4,183,057. Valid but not infringed.  
\*1573 Frank J. Benasutti, Philadelphia, Pa., argued for appellant.

David J. Cushing, of Washington, D.C., argued for appellees. With him on the brief was Darryl Mexic, Washington, D.C.

Before MILLER and SMITH, Circuit Judges, and RE, Judge. [FN\*]

FN\* The Honorable Edward D. Re, Chief Judge, United States Court of International Trade, sitting by

designation.

EDWARD S. SMITH, Circuit Judge.

In this patent case, ACS Hospital Systems, Inc. (ACS), appeals from a judgment of the U.S. District Court for the Western District of Pennsylvania, 564 F.Supp. 330, \*1574 holding U.S. patent No. 4,183,057, issued to Sonnenberg (the Sonnenberg patent), invalid as obvious under 35 U.S.C. § 103 (1976) and not infringed. Montefiore Hospital and Wells National Services Corp. (Wells) cross-appeal from the district court's denial of their motion for attorney fees. The judgment is reversed with respect to invalidity and affirmed with respect to noninfringement. With respect to Wells' cross-appeal from the denial of attorney fees, the judgment is affirmed.

#### Background

ACS's Sonnenberg patent claims a rental television system comprising a key operated actuating switch, an override switch, and a signal light to indicate that the override switch has been actuated. When the key switch is in the "on" position, the television operates normally. For rental use, the key switch is placed in the "off" position by a key operator. In order to rent the television, the viewer depresses the override switch which enables the television to operate normally without the necessity of turning on the key operated switch. When the override switch has been activated the indicator signal is illuminated, signaling that the television has been rented. Claim 1 is representative:

A television system constructed for rental use, the television system comprising: actuating means including a key operated switch switchable between an off position for preventing normal operation of the television and an on position for enabling the television to be operated; override switching means capable of being switched from a normal position to an actuated position for overriding said key operated switch when in its off position and enabling the television to be operated; and said override switching means when switched in to [sic] its actuated position remains in

said position until said key operated switch is switched into its on position; and indicating means for providing an indicating signal when said override switching means has been switched into its actuated position.

#### Validity

The trial court held the claims of the Sonnenberg patent invalid under section 103. While the trial court's opinion deals predominantly with infringement, the court purported to apply the standards articulated in *Graham v. John Deere Co.* [FN1] in determining the issue of validity. In concluding that the Sonnenberg patent is invalid under section 103, the district court relied on override switches generally and ACS's "COMPU-TEL" fully automated television rental system as prior art.

FN1. *Graham v. John Deere Co.*, 383 U.S. 1, 86 S.Ct. 684, 15 L.Ed.2d 545, 148 USPQ 459 (1966).

The court below stated that "the overriding of switches by providing an alternative path for current to actuate an appliance is a commonly practiced technique well known in the art prior to Sonnenberg's patent." It held that his claim 1 is therefore invalid as obvious. The trial judge adopted Wells' expert's description of ACS's COMPU-TEL system and held the Sonnenberg patent invalid as an attempt by ACS to "monopolize all systems of enabling a hospital patient to view television \* \* \* without the aid of an attendant." (Emphasis in original.) He commented that "[t]he statutory presumption [of validity] of 35 U.S.C. 282 is entirely annihilated by the indisputable facts in the record."

#### Presumption of Validity

[1][2] As an initial matter, we hold that the trial court's treatment of the presumption of validity is incorrect as a matter of law. The presumption is *never* annihilated, destroyed, or even weakened, regardless of \*1575 what facts are of record. [FN2] Rather, it is a clear statutory procedural device which assigns to the party asserting invalidity the burden of



proving invalidity. [FN3]

FN2. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1534, 218 USPQ 871, 875-76 (Fed.Cir.1983).

FN3. *Id.*

A patent shall be presumed valid. \* \* \* The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity. [FN4]

FN4. 35 U.S.C. § 282 (1976).

The burden of persuasion is, and remains always, on the party asserting invalidity. [FN5] In the present case this error is not harmless. The district court's holding of invalidity has been shown, on the entire record, to have been reached on the basis of both clearly erroneous findings of fact and misapplication of the law. [FN6]

FN5. *Stevenson v. U.S. Int'l Trade Comm'n*, 612 F.2d 546, 551, 67 CCPA 109, 115, 204 USPQ 276, 281 (1979); *Solder Removal Co. v. U.S. Int'l Trade Comm'n*, 582 F.2d 628, 632-33, 65 CCPA 120, 125-26, 199 USPQ 129, 132-33 (CCPA 1978). See also *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed.Cir.1983); *Medtronic, Inc. v. Cardiac Pacemakers, Inc.*, 721 F.2d 1563, 220 USPQ 97 (Fed.Cir.1983); *Stratoflex*, 713 F.2d at 1534, 218 USPQ at 875-76; *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 773-74, 218 USPQ 781, 790 (Fed.Cir.1983).

FN6. Cf. *Medtronic*, 721 F.2d at 1566, 220 USPQ at 99 (errors in decisional approach considered harmless).

### Section 103

This court has in recent months issued a number of opinions addressing the analysis of obviousness under section 103 [FN7] and those opinions provide a comprehensive guide to analysis. We hold that the trial court's analysis of obviousness is inadequate under *Graham* [FN8] to sustain a holding of invalidity under section 103. However, the trial court's opinion contains sufficient findings of fact, supported in the record, to

enable us to review the conclusion below that the Sonnenberg patent is invalid.

FN7. *In re Sernaker*, 702 F.2d 989, 217 USPQ 1 (Fed.Cir.1983); *Orthopedic Equip. Co. v. United States*, 702 F.2d 1005, 217 USPQ 193 (Fed.Cir.1983); *Orthopedic Equip. Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 217 USPQ 1281 (Fed.Cir.1983); *Chore-Time Equip., Inc. v. Cumberland Corp.*, 713 F.2d 774, 218 USPQ 673 (Fed.Cir.1983); *Schenck, A.G. v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed.Cir.1983); *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 218 USPQ 865 (Fed.Cir.1983); *Stratoflex*, 713 F.2d 1530, 218 USPQ 871.

FN8. *Graham*, 383 U.S. at 17-18, 86 S.Ct. at 693-694, 148 USPQ at 467, provides, in pertinent part: " \* \* \* [Section] 103 \* \* \* lends itself to several basic factual inquiries. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or non-obviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy. \* \* \* "

### Scope and Content of the Prior Art.

In determining the scope and content of the prior art, the trial court found that override switches generally were well known in the art. It also found that ACS's COMPU-TEL system was within the prior art under section 102(g). The district court did not in its opinion rely on any other prior art reference in determining whether the claimed invention would have been obvious under section 103.

[3] Five U.S. patents [FN9] are cited in the Sonnenberg patent as prior art. Further, the parties refer to the "Western New York Hospital" rental television system as prior art. While the trial judge made no mention in his opinion of these additional \*1576 references,

on the basis of the record before us, they each constitute prior art relative to the Sonnenberg patent. We hold that the trial court's limited assessment of the prior art was clearly erroneous in that the court below failed to find that these additional references are within the scope and content of the prior art. These errors, however, have not been shown to have influenced the trial court's judgment in this case and, accordingly, we consider them harmless.

FN9. Norris, U.S. patent No. 2,856,474; Townsend, U.S. patent No. 3,188,384; Sargent, U.S. patent No. 3,335,421; Daniel, U.S. patent No. 3,631,444; and Kosco, U.S. patent No. 3,886,302.

*Differences.*

[4] With respect to the differences between the claimed subject matter and the prior art, the district court gave claim 1 of the Sonnenberg patent an extremely broad construction. It adopted the opinion of Wells' expert that the COMPU-TEL system contains every feature of claim 1. Hence, the court below found no significant differences between the claimed subject matter and the prior art. We hold that finding to be clearly erroneous. In addition, that finding reflects an erroneous construction of the claims.

The trial court in its discussion of obviousness, rather than ascertaining the differences between the claimed subject matter and the prior art, focused on the differences between the Wells and the ACS systems. In so doing, it adopted Wells' expert's explanation of the differences between claim 1 and the Wells system--differences relating to literal infringement, not validity. We conclude that the trial court erred in adopting Wells' expert's interpretation of claim 1.

Differences between the prior art and the claimed invention are apparent from the record. First, while override switches are used in a wide variety of applications, the examples of override switches cited by the district court are not relevant to the claimed subject matter as a whole--television rental

systems. The district court made no attempt in its opinion to identify the differences between the override switching examples that it cited and the claimed subject matter.

Second, the record discloses that COMPU-TEL is a fully automated television rental system whereas the claimed invention involves human monitoring and control. While COMPU-TEL and the claimed invention both exhibit certain switching elements, the functions of the switching elements in the two systems are different. The fully automated operation of the COMPU-TEL system does not involve overriding a locked key switch. The patient switch in the COMPU-TEL system functions to actuate the television as well as to initiate billing. The override switching means claimed in the Sonnenberg patent, on the other hand, functions to provide an alternative current path to the locked key switch and to actuate the indicator light.

Third, the prior art of record that the court did not discuss also differs significantly from the claimed subject matter. The five patent references cited in the Sonnenberg patent involve a variety of lock, metering, and control systems. None of them, however, employs an override switching mechanism to overcome a key operated actuating switch. The Western New York Hospital system involves a three position key switch. Yet, that system differs from the claimed subject matter in that it too does not employ override switching means.

Hence, we hold the trial court's assessment, that there are no differences between the claimed subject matter and the prior art, was clearly erroneous.

*Level of Ordinary Skill and Secondary Considerations.*

Additionally, the court below made no express finding with respect to the level of ordinary skill in the art. The trial court's analysis, however, clearly indicates that the level of skill was considered to be quite low. We interpret the court's findings as fixing the

level of ordinary skill in the art as that of a layman. That finding has not \*1577 been shown to be clearly erroneous. The court made no findings with respect to secondary considerations.

*Claim Construction.*

As noted above, the trial court's opinion reflects an extremely broad construction of the claims. Contrary to the district court's construction of the claims, the Sonnenberg patent does not claim "all systems of enabling a hospital patient to view television normally under his own power without the aid of an attendant." (Emphasis in original.) The court ignored express claim limitations governing the function of the switching means.

[5][6][7] Claims are to be read and construed in light of the specification and the prosecution history of the patent. [FN10] Further, claims should be so construed, if possible, as to sustain their validity. [FN11] Applying these principles, the claims of the Sonnenberg patent should be given a far more limited construction than that given by the district court in holding the claims invalid. The claims are limited to a system in which override switching means function to override a key switch when in its "off" position, enabling the television to operate normally. The Sonnenberg patent does not claim "all " hospital rental systems capable of operation without an attendant. Claim construction is a question of law. [FN12] We hold that the trial court's construction of the claims is incorrect as a matter of law.

FN10. *Fromson v. Advance Offset Plate, Inc.*, 720 F.2d 1565, 1570- 71, 219 USPQ 1137, 1140-41 (Fed.Cir.1983); *Autogiro Co. v. United States*, 384 F.2d 391, 397-99, 181 Ct.Cl. 55, 63-66, 155 USPQ 697, 702- 04 (1967).

FN11. *Carman Indus., Inc. v. Wahl*, 724 F.2d 932, 937 n. 5, 220 USPQ 481, 485 n. 5 (Fed.Cir.1983); *Klein v. Russell*, 86 U.S. (19 Wall) 433, 466, 22 L.Ed. 116 (1874); *Turrill v. Michigan S. & N.I. R.R.*, 68 U.S. (1 Wall) 491, 510, 17 L.Ed. 668 (1864).

FN12. *Autogiro*, 384 F.2d at 397-99, 181 Ct.Cl. at 63-66, 155 USPQ at 702-04; *LaSalle v. Carlton's Laydown Serv., Inc.*, 680 F.2d 432, 216 USPQ 276 (5th Cir.1982); *Studiengesellschaft Kohle mbH v. Eastman Kodak Co.*, 616 F.2d 1315, 206 USPQ 577 (5th Cir.), cert. denied, 449 U.S. 1014, 101 S.Ct. 573, 66 L.Ed.2d 473, 208 USPQ 88 (1980).

*Obviousness.*

Turning now to the determination of obviousness under section 103, we conclude that none of the references, either alone or in combination, would have disclosed or suggested to one of ordinary skill in the art the use of override switching means in a television rental system. The trial court's heavy reliance on the widespread use of override switches appears to be no more than hindsight reconstruction of the claimed invention. The court below identified no source, other than the Sonnenberg patent itself, for the suggestion to use override switching means in a television rental system.

[8][9] Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. [FN13] Under section 103, teachings of references can be combined *only* if there is some suggestion or incentive to do so. [FN14] The prior art of record fails to provide any such suggestion or incentive. Accordingly, we hold that the court below erred as a matter of law in concluding that the claimed invention would have been obvious to one of ordinary skill in the art under section 103.

FN13. *Orthopedic Equip. Co.*, 702 F.2d at 1012, 217 USPQ at 199; cf. *In re Samour*, 571 F.2d 559, 563, 197 USPQ 1, 4 (CCPA 1978) (noting the rule in the § 103 context and declining to extend that rule to § 102(b) rejections); *Corometrics Medical Sys., Inc. v. Berkeley Bio- Engineering, Inc.*, 193 USPQ 467, 475 (N.D.Cal.1977).

FN14. *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *In re Regel*, 526 F.2d 1399, 188 USPQ 136 (CCPA 1975); *In re Avery*, 518 F.2d 1228, 186 USPQ 161 (CCPA 1975); *In re Imperato*,

486 F.2d 585, 179 USPQ 730 (CCPA 1973); *In re Andre*, 341 F.2d 304, 52 CCPA 1019, 144 USPQ 497 (1965).

**\*1578 Infringement**

The trial court found that the Wells system does not infringe the claimed invention, either literally or under the doctrine of equivalents. Once again adopting the testimony of Wells' expert, the court below found that "the Wells system does not contain the element of overriding a locked switch." The district court also found differences between the ACS system and the Wells device with respect to the mechanism and circuitry of the actuating switch as well as with respect to the indicator light.

[10] These latter findings, however, will not support a finding of no infringement. The claims of the Sonnenberg patent are not limited to a specific switching mechanism or to specific indicator light circuitry. The district court appears to have compared the Wells system with ACS's commercial product, rather than with the claims of the Sonnenberg patent. Infringement is determined on the basis of the claims, not on the basis of a comparison with the patentee's commercial embodiment of the claimed invention.

The district court's failure to supply more comprehensive findings of fact compounds the difficulty of appellate review, particularly in view of the complexity of the technical subject matter of this appeal. Findings of fact are to be construed liberally in support of a judgment. Confined to the trial court's limited findings, we are forced to draw from the facts found those inferences that are necessary to support the ultimate finding that the Sonnenberg patent is not infringed by Wells. [FN15]

FN15. 5A J. MOORE, J. LUCAS, MOORE'S FEDERAL PRACTICE ¶ 52.06[1] (2d ed. 1984).

[11] In this endeavor we are not ourselves finding those facts which the trial court failed to set out for us. As an appellate court, we lack the power to perform that exercise. Where the trial court fails to make findings,

the judgment will normally be vacated and the action remanded for appropriate findings to be made. [FN16] Where a full understanding may be had without the aid of separate findings, however, we recognize a narrow exception to that general rule. [FN17]

FN16. *Pullman-Standard v. Swint*, 456 U.S. 273, 292 n. 22, 102 S.Ct. 1781, 1791 n. 22, 72 L.Ed.2d 66 (1982); 5A MOORE'S FEDERAL PRACTICE ¶ 52.06[2].

FN17. See 5A MOORE'S FEDERAL PRACTICE ¶ 52.06[2] n. 4 and cases cited therein.

[12] The ultimate finding of fact in a case, whether initially by the trial court, or as affirmed on appeal, rests on the same underpinnings, i.e., the necessary subsidiary facts, supported by evidence of record, that lead to that ultimate finding. Where the district court has not misapplied the controlling legal standards in its evaluation of the evidence, its ultimate finding as well as the subsidiary findings upon which the ultimate finding necessarily depends, is subject to review on appeal under the clearly erroneous standard of Fed.R.Civ.P. 52(a). [FN18] We examine the record in order to review the trial court's judgment, and the findings it made or necessarily had to have made to support that judgment and, thus, to conclude the controversy at this stage without unnecessary further expenditure of judicial resources, if possible.

FN18. Cf. *Pullman-Standard*, 456 U.S. 273, 102 S.Ct. 1781, 72 L.Ed.2d 66.

*The Sonnenberg Claims.*

[13] The Sonnenberg patent claims a rental television system having key operated actuating means capable of being overridden by an override switching means. An indicating means signals that the override switching means has been actuated. Once overridden, the switches and the indicator light remain in their overridden positions until the key operated switch is switched on, resetting the override switching and indicating means.

*The Accused Infringing Device.*

The Wells device also contains each of the three physical elements of claim 1 of \*1579 the Sonnenberg patent: (1) a key operated actuating switch; (2) a remote control actuating switch; and (3) an indicator light. The district court, however, found that the Wells device does not contain the claimed limitation of overriding a locked switch--a difference in function.

The Wells device is a modified version of a standard hospital/hotel/motel television receiver. The keylock in the Wells system actuates 5 switches: S1XA; S1XB; S1B; S1C; and S1D [Fig. 1].

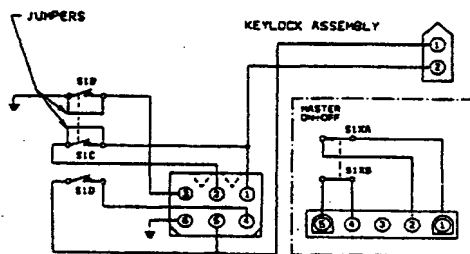


Fig. 1  
Wells Device  
Keylock Assembly As Manufactured

In the Wells device, the jumper wires, provided by the manufacturer on switches S1B and S1C, are not removed. [Fig. 2.]

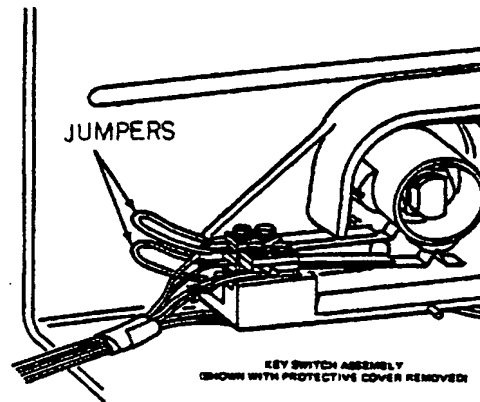
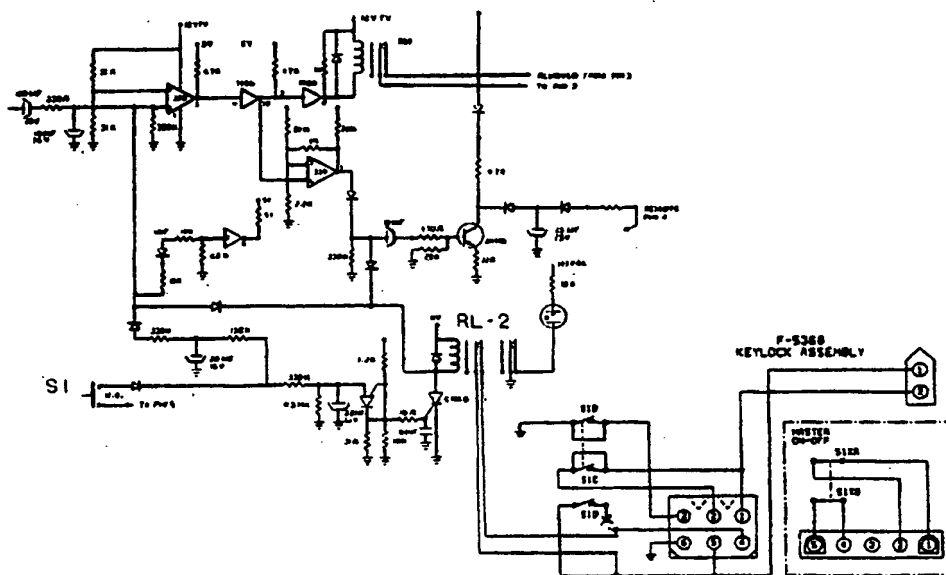


Fig. 2  
Wells Device  
Rear of Key Switch Showing Jumpers

Switches S1B and S1C are shorted out by those jumper wires, rendering those switches electrically inoperable.

Additionally, switch S1D [Fig. 1] is "replaced" by relay RL-2 [Fig. 3] of the Wells remote control circuit.

\*1580



Relay RL-2 is connected in parallel with switch S1D and one of the leads to switch S1D is cut between switch S1D and the connection of the lead to relay RL-2 [Fig. 3]. Thus, the circuit through switch S1D is broken, rendering that switch electrically inoperable.

Unlike switch S1D which it replaces, relay RL-2 is not controlled by the key switch. Rather, switch S1 [Fig. 3], located on the remote control unit, operates relay RL-2 in the Wells device. When S1 is not depressed, relay RL-2 remains normally closed. When switch S1 is depressed, the coil in relay RL-2 is energized causing relay RL-2 to open. Similarly, switch S1D, which relay RL-2 replaces, was normally closed when the television was not rented and was opened by turning the key switch to rent the television.

Switches S1B, S1C, and S1D, therefore, are disabled in the Wells device. The key switch operates only two switches-S1XA and S1XB

[Fig. 1]-which control the delivery of power to the television receiver. When these switches are closed [positions 2 and 3] [Table 1], power is delivered to the tuner; when these switches are open [position 1] [Table 1], the circuit is broken and no power reaches the tuner.

**\*1581**

KEY SWITCH & PROGRAMMING TAB POSITION TABLE								
AS MANUFACTURED								
MODE	KEYLOCK SWITCH	FUNCTION	CLOSED SWITCHES	OPEN SWITCHES	PROGRAMMING TAB	CHANNEL SELECTOR	CLOSED SWITCHES	OPEN SWITCHES
1		TOTAL OFF	NOT APPL.-CABLE	SX1A SX1B	NOT APPLICABLE	NOT APPL.-CABLE	NOT APPL.-CABLE	NOT APPL.-CABLE
2		STOP ON FREE & PAY CHANNELS ONLY	SX1A SX1B S1B S1C	S1D		WILL STOP	SS	
						WILL SKIP	S4A S4B	SS, S4A, S4B.
						WILL STOP		
3		STOP ON FREE CHANNELS ONLY	SX1A SX1B S1B S1C S1D			WILL SKIP	SS	
						WILL SKIP	S4A S4B	
						WILL STOP		SS, S4A, S4B.

Table I

Table I

As manufactured, when the key switch of a standard receiver is in position 2 [Table 1], switch S1D is open and the television operates normally. Position 2 functions as an "on" setting in the standard receiver. In the Wells device, however, switch S1D [Table 1] has been disconnected and it has been replaced by relay RL-2. Relay RL-2 cannot be opened by manipulation of the key switch, as was switch S1D. Thus, the receiver cannot be actuated merely by turning the key switch to position 2 in the Wells device. [FN19] Switch S1 opens relay RL-2. The Wells receiver can be made fully operable only by depressing switch S1 [Fig. 3] while master on-off switches S1XA and S1XB are closed--position 2 or 3 [Table 1].

FN19. It appears that had RL-2 and S1D been wired in series, instead of in parallel with S1D disabled, the Wells device would exhibit the claimed "on" function.

When the key switch is in position 1, power is interrupted and depressing actuating switch S1 will not actuate the receiver. The Wells key switch performs the same function in

position 2 as in position 3. In both of those positions, while power is supplied to the tuner, the actuating switch S1 must be depressed in order to actuate the television. Thus, switch S1 does not override the key switch of the Wells device. [FN20] Switch S1 and the key switch are electrically independent in the Wells device [Fig. 4].

FN20. Our assessment of the operation of the Wells device is based on the trial court's findings and on the documentary and testimonial evidence of record. It appears that only switches S1XA and S1XB are controlled by the key switch. Thus, our analysis supports the trial judge's implication that there is no functional difference between positions 2 and 3 of the key switch. The above analysis assumes that the key switch does not operate some third circuit that is actuated in either position 2 or position 3, but not both. We are aware of no evidence that such a third circuit fulfills the role of the key switch and is in turn overridden by switch S1.

\*1582

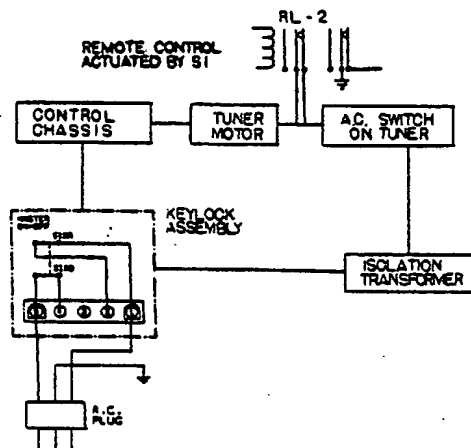


Fig. 4  
Wells Device  
A.C. Switching

In summary, the Wells device exhibits three modes of operation: (1) off-- locked out (switches S1XA and S1XB open); (2) rentable-- key position 2 or 3 and S1 not actuated (switches S1XA and S1XB closed and switch S1 open); and (3) rented--key position 2 or 3 and S1 actuated (switches S1XA and S1XB closed and switch S1 closed). Normal operation of the Wells device can be achieved *only* by depressing S1 while the power is switched on (key switch position 2 or 3). The invention claimed in the Sonnenberg patent, on the other hand, also exhibits three modes of operation: (1) "off"--rentable (override switch not actuated); (2) "on"--rented (override switch actuated); and (3) "on"--key operation (key switch turned on and override switch not actuated).

On the basis of our examination of the record we infer that the district court necessarily found the following relative to the Wells device: (1) switches S1B, S1C, and S1D are disabled; (2) the key switch controls only switches S1XA and S1XB--the master on-off switch; and (3) the receiver can be actuated only by depressing S1 while the key switch is in either position 2 or 3 (so that switches S1XA and S1XB are closed).

#### *Literal Infringement.*

These implied findings lead inexorably to the district court's express finding that the Wells device lacks the claimed limitation of overriding a locked key switch. Further, these findings indicate that the Wells device does not exhibit the claimed "on" key switch position.

Both the "on" and "off" positions recited in claim 1 correspond to the "on" positions [positions 2 and 3] of the key switch in the Wells device. The Wells device cannot be operated normally through the key switch alone, as is required by claim 1. Rather, switch S1 must be depressed in conjunction with power being supplied to the receiver through the key switch. Hence, on the basis of the record before us, we conclude that the district court's finding, that Wells does not literally infringe the claims of the Sonnenberg patent, is not clearly erroneous.

#### *Doctrine of Equivalents.*

While the district court purported to apply the standard articulated in *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*, [FN21] it entered no findings on the issue of equivalence: whether the Wells device performs substantially the same function as the claimed invention in substantially the same way to obtain substantially the same result. [FN22] Yet, the court clearly implied that Wells does not infringe the Sonnenberg patent under the doctrine of equivalents and entered judgment to that effect.

FN21. *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 607-09, 70 S.Ct. 854, 855-56, 94 L.Ed. 1097 (1950).

FN22. *Id.* at 608, 70 S.Ct. at 856; *Sanitary Refrigerator Co. v. Winters*, 280 U.S. 30, 42, 50 S.Ct. 9, 13, 74 L.Ed. 147 (1929).

We infer that the district court necessarily found that the Wells device, lacking the claimed function of overriding a locked key switch, does not function in substantially the same way as the claimed invention. \*1583 That inference is supported by the record. Accordingly, we conclude that the district



court's finding, that the Wells device does not infringe the Sonnenberg patent under the doctrine of equivalents, is not clearly erroneous.

Hence, we affirm in part the judgment of the district court insofar as it relates to the finding that the Wells device does not infringe the claims of the Sonnenberg patent, either literally or under the doctrine of equivalents.

#### Attorney Fees

[14] The trial judge found that this is not an exceptional case and denied Wells' request for attorney fees. In order to prevail on its cross-appeal, Wells must establish that the trial judge abused his discretion in this regard and not merely, as Wells' attorneys contend, that the trial judge committed clear error. Wells has not demonstrated the requisite abuse of discretion, although it attempts to do so by demonstrating alleged fraudulent conduct by ACS before the Patent and Trademark Office. Fraud has not been shown. Nor have other facts been established that would demonstrate that the trial judge abused his discretion in finding that this case is not exceptional. Thus, we affirm the district court's denial of Wells' motion for attorney fees.

#### Conclusion

In summary, we hold that the district court committed both clear errors of fact and errors of law with respect to its resolution of the validity issue. The district court's conclusion that the Sonnenberg patent is invalid under section 103 is incorrect as a matter of law. We conclude that the trial court's finding, that Wells does not infringe the claims of the Sonnenberg patent, either literally or under the doctrine of equivalents, is not clearly erroneous. Additionally, we hold that the trial judge did not abuse his discretion in denying Wells' motion for attorney fees.

**AFFIRMED IN PART AND REVERSED IN PART.**

732 F.2d 1572, 221 U.S.P.Q. 929

Briefs and Other Related Documents (Back to top)

. 1983 WL 486717 (Appellate Brief) Brief for Appellant/Cross-Appellee ACS Hospital Systems, Inc. (Nov. 07, 1983)

. 1983 WL 486715 (Appellate Brief) Brief of Appellant Acs Hospital Systems, Inc. (1983)

. 1983 WL 486716 (Appellate Brief) Brief of Montefiore et al (1983)

END OF DOCUMENT

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**In re Antonie**  
**(CCPA)**  
**195 USPQ 6**  
**Decided Aug. 18, 1977**  
**No. 76-681**  
**U.S. Court of Customs and Patent Appeals**

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**Headnotes**

**PATENTS**

**1. Patentability -- Invention -- In general (§ 51.501)**

Court of Customs and Patent Appeals must first delineate invention as whole in determining whether invention as whole would have been obvious under 35 U.S.C. 103; it looks not only to subject matter that is literally recited in claim in question but also to those properties of subject matter that are inherent in subject matter and are disclosed in specification, in delineating invention as whole; just as chemical and its properties are looked to when obviousness of composition of matter claim is examined for obviousness, invention as whole, not some part of it, must be obvious under Section 103.

**2. Patentability -- Invention -- In general (§ 51.501)**

Controlling question in determining obviousness is simply whether differences between prior art and invention as whole are such that invention as whole would have been obvious.

**3. Patentability -- Invention -- In general (§ 51.501)**

Standard of 35 U.S.C. 103 is not that it would be obvious for one of ordinary skill in art to try invention; disregard for unobviousness of results of "obvious to try" experiments disregards "invention as a whole" concept of Section 103, and overemphasis on routine nature of data gathering required to arrive at applicant's discovery, after its existence became expected, overlooks last sentence of Section 103.

**4. Patentability -- Change -- In general (§ 51.251)**

**Patentability -- Invention -- In general (§ 51.501)**

Exception to rule that discovery of optimum value of variable in known process is normally obvious occurs

when parameter optimized was not recognized to be result effective variable.

**Particular patents -- Contactor Apparatus**

Antonie, Rotating Biological Contactor Apparatus, rejection of claims 1-3 reversed.

**Case History and Disposition:**

Page 6

**Appeal from Patent and Trademark Office Board of Appeals.**

Application for patent of Ronald L. Antonie, Serial No. 331,796, filed Feb. 12, 1973. From decision rejecting claims 1-3, applicant appeals. Reversed; Miller, Judge, concurring in result; Maletz, Judge, with whom Rich, Judge, joins, dissenting with opinion.

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**Attorneys:**

Arthur H. Seidel, Thomas W. Ehrmann, and Quarles & Brady, all of Milwaukee, Wis., for appellant.

Joseph F. Nakamura (R. D. Edmonds, of counsel) for Commissioner of Patents and Trademarks.

**Judge:**

Before Markey, Chief Judge, Rich, Baldwin, and Miller, Associate Judges, and Herbert N. Maletz, \* Associate Judge, United States Customs Court.

**Opinion Text****Opinion By:**

Baldwin, Judge.

This is an appeal from a decision of the Patent and Trademark Office (PTO) Board of Appeals (board) affirming the rejection of claims 1, 2 and 3 of an application for "Rotating Biological Contactor Apparatus" <sup>1</sup> as obvious under 35 USC 103 in view of El-Naggar. <sup>2</sup> We reverse.

**The Invention**

Appellant claims a wastewater treatment device in which wastewater is continuously passed through a tank. Semi-immersed contactors (disks) are continuously rotated to aerate their immersed portions and thereby to aerate both microorganisms that grow on the contactors and the wastewater itself. For this discussion, several variables

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are important in this device. "Throughput" is the volume of wastewater per unit time (gal./day) which the device must treat. "Contactor area" is the total area of the contactors which is exposed to the wastewater as the contactors are rotated (sq. ft.). "Tank volume" is the actual volume of liquid in the tanks in which the contactors rotate (gal.). The ratio of throughput to contactor area (gal./day/sq. ft.) is called the "hydraulic loading." Two concepts of effectiveness of the equipment are important in this discussion. The primary prior art reference uses the term "efficiency" to denote the percent impurity reduction which a given set-up of the device achieves and we shall so use the term. Appellant uses the term "maximum treatment capacity" to denote when a *unit of contactor area* is providing maximum "efficiency" for a given "throughput" or maximum "throughput" for a given "efficiency." It is essential to understand the distinction between "efficiency," a matter of ultimate effectiveness independent of the efficiency of the equipment, and "treatment capacity," a matter of the efficiency or effectiveness of a unit of contactor area. The latter is more properly associated with the normal use of the term "efficiency" denoting maximum result from a limited resource.

Appellant's claimed device has a ratio of tank volume to contactor area of 0.12 gal./sq. ft. <sup>3</sup> Appellant maintains that this ratio is the most desirable or optimum for all set-ups of the device in the sense that using a lower value gives lower "treatment capacity" and using a greater value gives no increase in "treatment capacity," merely increasing costs. Thus, the value is optimum in that it maximizes "treatment capacity" so that the effectiveness of a given contactor is maximized.

### The Prior Art

El-Naggar teaches the basic structure of the device claimed by appellant but is silent regarding quantitative design parameters other than to give data on a single example, which data was apparently complete *except for any discussion of "tank volume."* El-Naggar stated the "efficiency" (obviously referring to the purity of the output) could be increased to 95% by increasing the area of the contactor.

### The Rejection

The examiner rejected the claims as obvious under 35 USC 103, noting that the basic device in question is old as taught by El-Naggar. While the ratio of tank volume to contactor area of 0.12 gal./sq. ft. is not disclosed in El-Naggar, the examiner reasoned that the disclosure of El-Naggar would make a device with that optimum value obvious. The examiner noted that El-Naggar suggests increasing the "efficiency" (degree of purification) of his device by increasing the contactor area while apparently keeping the "throughput" constant, that is, reducing the "hydraulic loading." The examiner then *assumed* that El-Naggar teaches keeping the tank volume constant while increasing the contactor area. Thus, the examiner argued that the idea of increasing tank volume to surface area to increase efficiency is taught and that working out the value for optimum efficiency is mere mechanical experimentation. The board accepted the examiner's reasoning.

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### Opinion

[1] In determining whether the invention as a whole would have been obvious under 35 USC 103, we must first delineate the invention as a whole. In delineating the invention as a whole, we look not only to the subject matter which is literally recited in the claim in question (the ratio value) but also to those properties of the subject matter which are inherent in the subject matter *and* are disclosed in the specification. In re Davies, 475 F.2d 667, 177 USPQ 381 (CCPA 1973). In this case, the invention as a whole is the ratio value of 0.12 *and* its inherent and disclosed property. That property is that the described devices designed with the ratio will maximize treatment capacity regardless of the values of the other variables in the devices. Just as we look to a chemical and its properties when we examine the obviousness of a composition of matter claim, it is this invention *as a whole*, and not some part of it, which must be obvious under 35 USC 103. Cf. In re Papesch, 50 CCPA 1276, 315 F.2d 381,

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137 USPQ 43 (1963).

[2]The controlling question is simply whether the differences (namely the value of 0.12 and its property) between the prior art and appellant's invention as a whole are such that appellant's invention as a whole would have been obvious. The answer is no. It is impossible to recognize, from the experiment taught by El-Naggar, that "treatment capacity" is a function of "tank volume" or the tank volume-to-contactor area ratio. Recognition of this functionality is essential to the obviousness of conducting experiments to determine the value of the "tank volume" ratio which will maximize treatment capacity. Such functionality can *only be determined* from data representing either efficiency at varying tank volume, fixed throughput, and fixed contactor area or throughput at varying tank volume, fixed efficiency, and fixed contactor area. Each of these experiments represents treatment capacity with fixed contactor area but varying tank volume. This sort of experiment would not be suggested by the teachings of El-Naggar since he was not trying to maximize or control "treatment capacity." The experiments suggested by El-Naggar do not reveal the property which applicant has discovered, and the PTO has provided us with no other basis for the obviousness of the necessary experiments.

[3]The PTO and the minority appear to argue that it would always be *obvious* for one of ordinary skill in the art to try varying *every* parameter of a system in order to optimize the effectiveness of the system even if there is no evidence in the record that the prior art recognized that particular parameter affected the result. <sup>4</sup> As we have said many times, *obvious to try* is not the standard of 35 USC 103. In *re Tomlinson*, 53 CCPA 1421, 363 F.2d 928, 150 USPQ 623 (1966). Disregard for the unobviousness of the results of "obvious to try" experiments disregards the "invention as a whole" concept of §103. In *re Dien*, 54 CCPA 1027, 371 F.2d 886, 152 USPQ 550 (1967) and In *re Wiggins*, 55 CCPA 1356, 397 F.2d 356, 158 USPQ 199 (1968), and overemphasis on the routine nature of the data gathering required to arrive at appellant's discovery, after its existence became expected, overlooks the last sentence of §103. In *re Saether*, 492 F.2d 849, 181 USPQ 36 (CCPA 1974).

[4]In *re Aller*, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955), the court set out the rule that the discovery of an optimum value of a variable in a known process is normally obvious. We have found exceptions to this rule in cases where the results of optimizing a variable, which was known to be result effective, were unexpectedly good. In

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*re Waymouth*, 499 F.2d 1273, 182 USPQ 290 (CCPA 1974); In *re Saether*, *supra*. This case, in which the parameter optimized was not recognized to be a result-effective variable, is another exception. The decision of the board is reversed.

### Footnotes

Footnote 1.

Serial No. 331,796, filed February 12, 1973.

Footnote 2. "Method of Treatment of Sewage by Bio-Oxidation and Apparatus Therefor," U.S. Patent No. 3,335,081, issued August 8, 1967.

Footnote 3. Claims 1 and 2 recite "at least about 0.12" while claim 3 recites "about 0.12."

Footnote 4. The precise nature of the El-Naggar experiment and the nature of the data which would result are rendered hopelessly speculative by El-Naggar's total failure to discuss the critical matter of what is done with the volume of the tank. The PTO appears to assume, as a necessary element of its conclusion, that appellant's ratio is the inevitable result of El-Naggar experiment, and that the tank volume is fixed, apparently because El-Naggar does not suggest changing the tank as additional contactor area is supplied. Even if the same tank were used, the actual liquid volume of the tank could change significantly if 1) the tank has a level control, 2) the tank is not

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extremely large in comparison to the contactors and 3) the volume-to-area ratio of the contactors themselves is significant. Since these assumptions are not unreasonable, there is serious doubt as to the constant volume of the tank.

Whether one would inevitably arrive at the ratio value of 0.12 or above depends on facts which must be read into El-Naggar, (e.g., the volume of the tank) and on assumptions about the kind of motivation (e.g., the degree of "efficiency" which would be sought). All of this involves, at least on this record, mere speculation. Assuming, as the examiner has, that the tank volume is fixed and the natural motivation is to maximize efficiency, if El-Naggar's equipment has a tank volume to contactor area ratio of less than 0.12, and the resulting efficiency is found wanting, increasing the contactor area to increase "efficiency" will lead away from the claimed ratio.

### **Dissenting Opinion Text**

#### **Dissent By:**

Maletz, Judge, with whom Rich, Judge, joins, dissenting.

With all due respect, I cannot agree with the majority's interpretation of the El-Naggar patent. El-Naggar discloses the same wastewater treatment apparatus as claimed, except for the specific volume-to-surface ratio of .12 gallons per square foot as recited in the claims. However, El-Naggar generally discloses varying the number of disks (column 3, lines 31-35), the number of concentric cylinders (column 4, lines 27-30), or the length of the cylinders (column 4, lines 61-62) in his apparatus in order to optimize results. Given the basic apparatus of El-Naggar and the concept of varying the number of disks in a tank in order to optimize impurity removal, I believe that it would have been well within the capabilities of the chemical engineer of ordinary skill to determine empirically, by routine experimentation, the optimum design ratio which appellant has determined and recited in his claims. That is, El-Naggar set the way, and appellant's work was what any routineer would have accomplished in following the patent teachings.

Appellant urges that the results which he determined empirically by plotting the effect of volume-to-surface ratio on impurity removal, including the specific, optimum design ratio of .12 gallons per square foot, could not have been predicted from El-Naggar. However, obviousness under 35 USC 103 does not require absolute predictability, *In re Kronig*, 539 F.2d 1300, 190 USPQ 425 (CCPA 1976), and it is sufficient here that El-Naggar clearly led the way for the routineer to arrive at the claimed apparatus.

I am in substantial agreement with the board's analysis of this case, and I would affirm the board's decision.

Footnote \* Judge of the United States Customs Court sitting by designation pursuant to 28 U.S.C. 293(d).

**- End of Case -**

